

## **Concepts and Perceptions of Biodiversity in Community Forestry, Nepal**

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International and national development programs in Nepal place high priority on management of forests for biodiversity. Communities are expected to embrace and cooperate in this endeavour for biodiversity conservation, yet little research has been carried out to understand community viewpoints on biodiversity conservation, or even to ascertain people's understanding of the concept of biodiversity. This paper explores perceptions and concepts related to biodiversity and its conservation held by people involved in community forestry in Nepal. Data were obtained from in-depth individual interviews and focus group discussions carried out in two contrasting geographical districts. The results show that the Western term 'biodiversity', translated into Nepalese as *jaiwik bibidhata*, is new and confusing to most forest people, who interpret the term in a variety of ways. People's perceptions of biodiversity vary widely and a considerable gap exists between policy-makers and forest users in the understanding and interpretation of this Nepalese term and its related concepts. These findings have important implications for the design and implementation of development programs and in formulation of forest policy in Nepal.

**Keywords:** biodiversity definition, *jaiwik bibidhata*, Nepal, community forest user groups

### **INTRODUCTION**

Forests currently provide 81% of total fuel consumed and more than 50% of fodder for livestock in Nepal (CBS 2001). The country lost 14% of forest area between 1978 and 1988 and forest now covers 29% of Nepal's total area, 8% less than in 1988 (Poudel 2003). Community forestry has been adopted as a main approach to manage the vast national forest resource (Shrestha 1996, Shrestha 2000). There are more than 13,500 community forest user groups (CFUGs), which include about 1.5 M households (42% of rural Nepali households) and a total of over 7 M people (Poudel 2003, DoF 2004). The community forestry (CF) program is more prominent in the Mid-Hills of Nepal where more than 13,000 CFUGs exist. There are only 301 CFUGs in the Tarai (lowland plains below 600 m altitude). The process of hand-over of forests to communities in the Tarai has been slow compared to that in the

Hills, because the Tarai forests are rich in high-value timbers, and the government has been reluctant to relinquish ownership of these resources (Shrestha 2001).

Forests are the main source of biodiversity in Nepal, and provide habitat for thousands of indigenous and rare species of fauna and flora that are not well conserved. Since Nepal signed the Earth Summit Convention on Biological Diversity (CBD) in 1992, government and non-governmental organisations in Nepal have formally initiated several programs in the area of biodiversity conservation. These programs require a shared view between forestry stakeholders in Nepal on what is meant by 'biodiversity'.

Biodiversity has been defined in many ways. For example Wilcox (cited in Wake 1989) viewed biodiversity as a science that deals with the variety of life and living organisms. The CBD defined biodiversity as the variability among living organisms from all sources, including diversity within species, between species and of ecosystems (UNEP 1992). Planners, policy makers and other stakeholders involved in the forestry sector each tend to have their own definitions and interpretations of biodiversity, which might differ among agencies and also from the interpretations of the forest users. Critical to the success of biodiversity conservation efforts is research that helps clarify community perceptions of these terms and concepts, so that agencies and professionals associated with this field clearly understand each other and the community viewpoints.

Government and development agency policy documents highlight participation of people as one of the prerequisites for biodiversity conservation, but low levels of awareness and participation of people are often mentioned as major threats to achieving this aim (HMGN/MoFSC 2002). The question of why people are not participating actively in conserving forest biodiversity has received little attention.

Patel *et al.* (1999) stated that knowledge of societal views is important to enable government policy to be tailored to accommodate better the needs of communities and so that programs can be developed that are in tune with people's needs, rather than those of outside agencies. Because poor and disadvantaged people often suffer most from impractical policies and improper implementation of development programs and projects, research is needed to support the formulation of equitable policies that cater for the needs of such people.

The overall aim of the research reported here has been to document the perceptions and understandings of biodiversity conservation held by people involved in community forestry in Nepal. More specifically, the research objectives were to document and understand the views of members of CFUGs on biodiversity and related concepts, and explore the main socio-economic factors affecting their perceptions of biodiversity conservation. This paper outlines the method adopted in the research, briefly describes community forestry in Nepal and summarises some results of the study. Results are presented under headings related to the major themes that arose from the qualitative data, gathered from various stakeholders in community forestry, on their perceptions of biodiversity.

## RESEARCH METHOD

This paper is based on research conducted during 2002-2004 in Kavrepalanchowk (Kavre) and Chitawan districts of Nepal. Kavre is 1400-1600 m above sea level and 50% of the district is covered by forest, of which 25% has been handed over to communities. Kavre is in the Mid-Hills and was the first district where community forestry was implemented. Chitawan is a Tarai district located to the west of Kathmandu at an altitude of about 200 m. Most of the forest is government-owned and few areas of forest have been handed over to communities for management. The study took place in four CFUGs in the Mid-Hills and in four in the Tarai. Most of the CFUGs selected for the study were handed over to users seven to 10 years ago. Criteria including accessibility, security, cooperation from authorities, and availability of well-matured CFUGs (managing forests for a minimum of 3-4 years) were used to select the study districts.

A qualitative approach was used to study the perceptions and views of CFUG members about biodiversity. Qualitative researchers try to make sense of the meanings that people bring to words or events, rather than imposing the preconceived ideas of the researchers. Patel *et al.* (1999) stated that qualitative methods are useful for understanding the attitudes and views of people and their perceptions and values towards the environment. A combination of tools from social sciences and participatory rural appraisal were used – particularly focus group discussions and in-depth individual interviews. In focus groups, 6-12 people were brought together in an environment that encouraged open expression of opinion on particular issues. Eight focus group meetings were held, four in each of Kavre and Chitawan.

Focus group participants in both districts comprised members from the Executive Committee (EC) of the selected CFUGs. The interviews with individual members were carried out to further explore the views and opinion arising from the focus groups. The participants represented general forest users and EC members (both male and female) from different caste groups. A total of 35 members from eight CFUGs were interviewed individually. In focus groups and individual interviews, general questions about community forest and its composition were asked initially and the topic of biodiversity was introduced gradually. People's various interpretations of biodiversity and related concepts were explored as these arose in discussion, and were followed up in interviews.

Grounded theory was used to guide interviewing, sampling and analysis of data. This approach is based on the systematic generation of theory from data (Glaser 1978). The data collected (i.e. words) were transcribed (from audio-recorded tapes) into word-processed Nepali script and later coded manually in English. Emerging themes related to biodiversity and conservation were identified and noted within the page margins. A diary was kept of all activities, thought processes and reasons for decisions or changes during data collection. Further coding and constant comparison between interviews (following Strauss and Corbin 2004) allowed the linking of themes and the generation of theory.

## COMMUNITY FOREST USER GROUPS

CFUGs are the groups of people residing in forest vicinities that are entrusted to manage, conserve and develop the forests and utilise the products from a particular area of forest. Membership of CFUGs is on a household basis, i.e. all members are household heads (Dhungana 2001). Each CFUG has a fixed number of users who are dependent on that forest (specified in the CF operational plan). Membership includes all households in the village but is not confined to the geographical boundaries of the village. People from all caste groups and gender are treated equally. Community forests are handed over to CFUGs after completion of specific procedures between the district forest office and the community. The CFUGs are run by an executive body, elected every 3-5 years. The process is guided by legislation, and a forest operational plan is prepared jointly with government staff.

## RESULTS – MAIN THEMES ON BIODIVERSITY

The results of research are presented under the main themes that emerged from interviews and focus group meetings.

### Perceptions of Users about Biodiversity

Literally translated, the term *jaiwik bibidhata* means ‘biological or life-related’ (*jaiwik*) and ‘different’ (*bibidhata*), but these two words are not normally used together in Nepali language in everyday conversations. Hence, it is not surprising that many different interpretations are given to biodiversity by forest users. It became apparent that the term *jaiwik bibidhata* means different things to different people. Some interviewees could not give opinions that were meaningful in relation to the common internationally held sense of the term ‘biodiversity’. Many users had never heard of the term *jaiwik bibidhata*. In general, respondents did not feel confident in talking about biodiversity. However, some people had clear definitions of biodiversity, and there were particular common themes in the data that are useful in understanding local interpretation. These are outlined below.

#### *Biodiversity as natural or original*

Biodiversity (*jaiwik bibidhata*) for many users implies the ‘original’ shape or form of a forest. ‘Original’ for these users meant the form the forest had before people disturbed it. For these users, undisturbed and uninterrupted forest (its original structure and composition) was synonymous with biodiversity. Dharma, a user in a Mid-Hills group said, biodiversity is ‘keeping forest as it was in the beginning’.

#### *Biodiversity as variety of species, aesthetics and co-existence*

Some users associated biodiversity with their desire to have a variety of plant and animal species in their community forest. These users preferred to have ‘many’ species among the plants available to them. They were not able to give specific reasons for this desire, but they mentioned that having different types of plants gave them satisfaction. They stated that if there are different types of living organisms in the forest, the forest becomes ‘beautiful’. This perception was most prevalent among the users from areas that attracted tourists. However, the enthusiasm for this concept

was less than for the use-benefits that offered immediate utilitarian values for the community (i.e. products for use or sale). Biodiversity for a few users was 'co-existence' and 'togetherness' of different living creatures. This view was linked to religious philosophy, because they mentioned that different things in the forest and in society live together because this universe is 'a house for everyone'.

#### *Biodiversity and conservation*

Users often associated biodiversity with concepts of conservation. They sometimes used these two terms interchangeably. The users' answers implied that conservation and biodiversity cannot stand in isolation: they thought that one can talk about biodiversity only after it is conserved.

#### *Utility-based views about biodiversity*

Attitudes of users to 'biodiversity conservation' appeared to be shaped mainly by their perception of the benefits they believe they receive from it. For instance, water supply was a crucial problem in many villages – and therefore the focus of users was always on protection or improvement of water sources. One user said 'water supply is important for us and we are achieving improved water supply from forest management. This is the major benefit from the community, if the water sources could be increased over time'. Where improved water supply was seen to be related to an increased number of species, biodiversity was seen in a positive light. Respondents often perceived forest biodiversity as 'forest for different uses' or 'multi-faceted use'. Examples of 'different' uses were religious purposes, a source of drinking water, an attraction for tourists and a plantation of income-generating herbal and medicinal plants.

#### *Users' attitudes towards forest and biodiversity*

Community forestry has given various rights and responsibilities to the users that make them feel a sense of ownership of the forest. It seems that this change in attitude that came with community forestry has contributed towards conserving forest biodiversity. People have to rely on forest for their livelihood, for example for firewood, fodder, litter, water sources and timber. This has forced users to think about their forest and follow the rules and regulations of the CFUG.

Because of their sense of ownership, users do not allow outsiders to encroach into their forest. The users felt proud when they heard complimentary words about their forest from other people and the authorities. The sense of ownership generated a feeling of responsibility, which created an environment of care and safety. This environment seems highly important for the wellbeing of forests and therefore for conservation of biodiversity.

Hand-over of management responsibility transferred the ownership and authority to manage the forests to users. This gave the users a feeling that 'this is our forest' and 'we are responsible' for its safety. Illegal encroachment and exploitation of forest has almost come to an end. The forest has become dense and the social environment is more favourable for conserving biodiversity. The users started to feel for the forest and they had emotions towards it. Krishna, a user from one of the Tarai FUG mentioned 'many of us were involved in deforestation in the past, but now we have understood and are committed to conserve forests'. It follows that such an attitude can contribute positively to biodiversity conservation.

### **Socio-Economic Factors Affecting the Perception of Biodiversity Conservation**

Various socio-economic factors were found to influence the perception of users about biodiversity conservation and their attitude towards it.

#### *Knowledge-base and biodiversity*

Until a few years ago, there was massive deforestation in Nepal, and many valuable species might have been lost. Now, people observe that forests are well looked after through community management and many species are reappearing or their population is increasing, even though some of these species are harvested. However, people said they have lost the knowledge of some species and only a few people can recognise all species. Although some community members had a wealth of knowledge about their preferred plants, species that were not used in any way were of little interest to most users. In these circumstances, some users are clearly looking for knowledge from outside on identification of species and their values, so that they can take care of them during the management process.

Some users were ignorant of some plant species present in their forest, either because they had never used these or because they had little knowledge about their uses. This lack of knowledge was admitted by people across the CFUGs and may be an important factor in causing loss of biodiversity in some community forests. For example, users were unaware of the economic value of a herb called Dhasingare (*Gaultheria fragrantissima*) until experts from outside told them about this plant. CFUGs members expected forest officials and development workers to play a role in bringing this new knowledge on biological diversity to the users.

An indigenous caste group in Tarai called Chaudhary was considered to be especially knowledgeable and skilful in dealing with herbs and traditional medicine in the villages in past times when modern medical facilities were not available. However, this group was concerned that they no longer have the traditional knowledge possessed by their ancestors about the forest. Since their business had declined, it seems that they were also losing the skills (and livelihood) that they had inherited.

People with frequent interaction with outsiders and a high level of exposure to forestry and 'biodiversity professionals' had heard of the term *jaiwik bibidhata* and were able to reflect on its meaning for them. Such members of the community were able to reflect on and analyse the activities of the committee in relation to harming or improving biodiversity in their forests. One CFUG member with a high level of exposure to forest issues said that 'biodiversity is to keep things intact and find out when that particular product is required'.

#### *Perceptions by disadvantaged people, women and the poor*

A small number of respondents were from a disadvantaged socio-economic caste group. These users had little interest in and knowledge of terms such as biodiversity. This was because they did not perceive high biodiversity to bring any immediate benefit to them. Most people from this category either worked as day labourers or carried on with their traditional skills, such as tailoring and blacksmithing. They expressed much less interest in understanding biodiversity or conservation than other users.

Although women are the main users of forest products, being busy with their household activities, they do not have as much exposure to outside views as males

and spend less time than men exploring and discussing forest related issues. Differences were observed in their perceptions and behaviour towards biodiversity conservation to those of men, particularly the more affluent men.

Users who perceived themselves as poor were generally indifferent to the concepts of biodiversity and conservation.

## DISCUSSION

Because forests are vital to the livelihood of forest users in both the Tarai and the Mid-Hills, it is important for policy makers and development agencies to understand the social aspects affecting environmental issues and the conservation of forest biodiversity (Baral and Subedi 2002, Patel *et al.*, 1999). The findings of this study may help policy makers, development workers and forestry professionals to understand better the viewpoints of forest users and hence to plan policies related to biodiversity that have potential for local acceptance. The qualitative, case-study approach used in this research did not attempt to provide results that are applicable to all forest communities and management across Nepal, but rather to reveal perceptions and concepts that could help to understand the social and cultural aspects of biodiversity in community forestry.

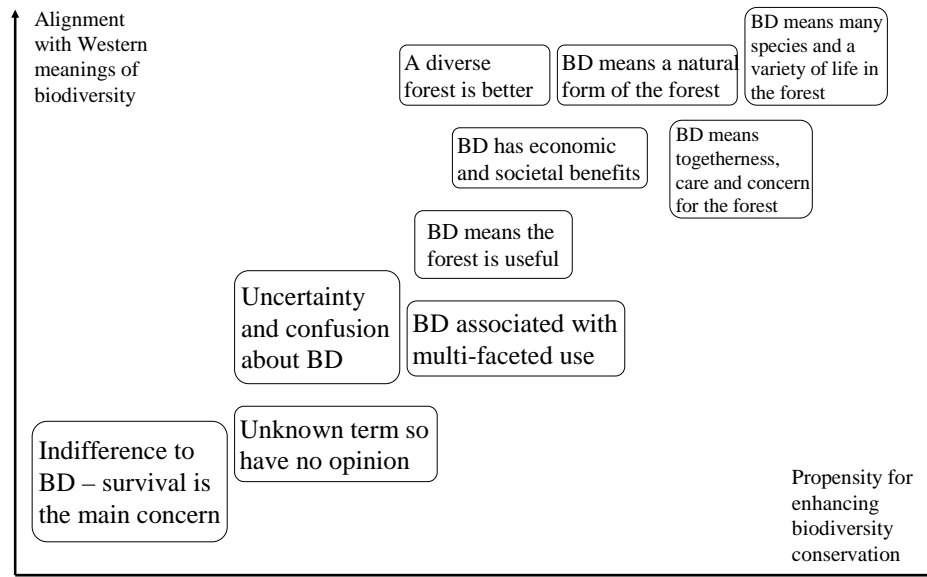
The most striking feature of the results of this study is the wide range of positions, opinions and perceptions expressed by villagers involved in the management and use of community forests. The Nepali term for biodiversity – *jaiwik bibidhata* – was totally new and unknown to many forest users, who were therefore not in a position to offer an opinion on its meaning. As a result, the perceptions and views expressed by the forest users in relation to biodiversity were often inconsistent. Some villagers who may have heard of the term (especially the most disadvantaged groups) were not inclined to discuss its meaning, because this seemed to have no relevance to their largely utilitarian needs and views on their forests. At the other extreme, some forest users (usually those in contact with biodiversity specialists or other outsiders) had apparently thought quite seriously about the term, and could relate biodiversity to concepts that had meaning to them and their community forest. Some of these concepts were quite close to the common western definitions of biodiversity conservation. Most respondents expressed their views on biodiversity in relation to forest vegetation and tree species, although some included animals and other forms of nature, such as wild animals and water in the concept that they revealed.

The wide range of views encountered about biodiversity amongst CFUG members across the two districts is broadly depicted in Figure 1. Views are arranged on two axes, namely 'alignment to Western views of biodiversity', and 'tendency towards enhancing biodiversity conservation'.

It is clear from the perceptions depicted in Figure 1 that there is wide variation and serious confusion among people managing and using community forests in Nepal about the meaning of 'biodiversity' as it is understood internationally. It also seems that, while some of the concepts and meanings attached to the term by forest users are likely to enhance efforts towards promoting conservation of biodiversity, other meanings may work against it. Although the most commonly encountered views are confusion or indifference, multi-faceted use associated with utility aspects was observed to be a quite common meaning attached to the term. This concept may

offer potential for designing programs that are attractive to forest users and that will also enhance biodiversity.

The meanings high on both axes in Figure 1 tended to be held by CFUG members who had strong contact with outsiders and their ideas. This suggests that there is hope that through awareness programs people's views towards biodiversity can be changed over time.



Note: Boxes with larger fonts represent views that are more common.

**Figure 1.** Range of views on biodiversity (BD) encountered amongst forests users in two districts in Nepal

This paper is derived from a larger study in which the views of government, non-government and foreign development professionals on biodiversity were also canvassed. Information gathered to date suggests that forestry and development agencies largely adopt western definitions of biodiversity, and have largely ignored the local meanings and concepts that are attached to the term by forest users. While many development agents are aware that there may be differences between villagers' and official interpretations of biodiversity, there is little evidence of effort to overcome the obvious blockages and constraints that these differences are causing in the promotion of biodiversity conservation. For example, biodiversity was not mentioned in any of the community forest operational plans in the CFUGs studied.

The silvicultural activities carried out by the users are mostly based on the knowledge and skills of local people rather than scientific justifications (Ojha 2002). It is important to include biodiversity conservation and issues related to this, in the training and regular meeting of CFUGs, so that they can be gradually integrated into forest management plans. However, such an awareness campaign would have to provide clear evidence that biodiversity conservation will provide benefits to users.



Misunderstanding and misinterpretation of people's perceptions related to biodiversity can be frustrating for all stakeholders in forest management. Policy makers and development workers in the field of community forestry should understand that CFUGs cannot be expected to follow policy aims of conserving or increasing biodiversity if policy makers have not articulated definitions of these terms clearly. In addition, CFUGs are unlikely to be worried about biodiversity conservation during the first few years (6-10 years) of forest hand-over to community management, because in the initial years, people focus on immediate benefits from the forest and its management (Acharya 2003). Although some executive committee members were interested in finding out more about diversity and about unusual species and possible benefits of conserving them in their forests, there was little opportunity or support for them to do so.

Further research being undertaken by the authors involves gathering information on socio-economic and other factors that seem to influence the understanding and associations held by people in relation to biodiversity. The main factors emerging to date are the obvious ones, such as of exposure to outsiders, who impart their own definitions and perceptions of biodiversity to community members. Another influence is the level of knowledge about biological species and their uses. Those who have appreciation of species names and possible uses seem to be inclined towards accepting western concepts of biodiversity and its conservation. On the other hand, those who are highly disadvantaged in society and have no contact with outsiders often have the least knowledge of species (apart from those they use) and hence the least interest in biodiversity and conservation activities. This last group is also the one most opposed to increasing the diversity of wild animals that might harm their meagre crops and livestock enterprises.

## CONCLUDING COMMENTS

For the first few years after being given responsibility for an area of forest, the CFUGs tend to conserve the forest by banning harvesting and controlling collection of forest products, enforcing the rules and regulations about illegal extraction and creating a strong social environment of trust and ownership in the village. These actions appear to be expressions of traditional religious and cultural understandings of the forest and have contributed to the conservation of biodiversity, without users being particularly aware that they were promoting this internationally favoured forest condition. Community forestry has therefore played a strong positive role in at least maintaining biodiversity despite economic circumstances that often force the poorer and disadvantaged members of the community to be pre-occupied with eking out a living despite the negative impact this has on the forest.

If forest development professionals are to make further headway in promoting or achieving conservation and enhancement of biodiversity in Nepalese forests, there seems to be an urgent need to (1) undertake further research on people's current views on forests and biodiversity with a view to building on them, (2) provide awareness programs to explain the possible benefits of high biodiversity in their forests, (3) provide training in concepts of biology and ecology, especially of the inter-dependence of species in forest ecosystems, (4) design participatory programs in which scientists and villagers can explore together existing species diversity as

well as the potential for other forms of forest diversity that could provide benefits in particular forests, (5) include a requirement for biodiversity conservation in community forest operational plans, and (6) provide training in all the above aspects for forestry professionals, especially in relation to participatory planning on biodiversity issues.

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